

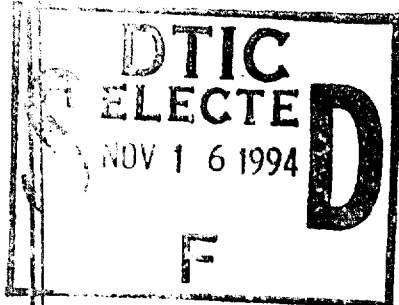
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REPORT No. P 42



DATE January 5, 1948

SUBJECT

SECOND QUARTER DELIVERY SAMPLE FROM THE AVON REFINERY

OF THE TIDEWATER ASSOCIATED OIL COMPANY OF CALIFORNIA



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94-35157



BY

U. S. NAVAL BOILER AND TURBINE LABORATORY

NAVAL SHIPYARD

PHILADELPHIA

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(WITH RECOMMENDATIONS)**

DTIC QUALITY INSPECTED 3

NBTL TEST NO. F 42

To: Inspector of Naval Material, San Francisco, California.

Subj: NBTL Report of Test No. F 42 - Second Quarter Delivery Sample from the Avon Refinery of the Tidewater Associated Oil Company of California.

Ref: (a) BuEng. lettr. JJ7-3(8-24-Is) of August 31, 1937.
(b) BuEng. lettr. JJ7-3(12-7-Is) of January 4, 1937.
(c) INM lettr. JJ7-3/337 over N.B:sw of October 20, 1947.
(d) Certificate of Approval No. EN28/15/4933.
(e) Navy Department Specification 7-C-1g of April 2, 1945.

1. The subject sample, in accordance with references (a), (b) and (c), has been analyzed to determine its compliance with the Grade Special Specification, reference (e). It has been assigned NBTL designation C-4311.

2. Results of routine, general classification and special solvent tests, in comparison with similar data furnished by the Inspector in reference (c), are tabulated in Plate 1. These data indicate compliance of the sample with specification requirements with the exception of pour point. Failure of the pour point obtained at this Laboratory (25°F) to check with the value reported by the Inspector (10°F) may be attributed to the pour instability of the sample. Solvent tests indicated a moderate cracked asphalt content. Its qualities compared favorably with those of the Brand Approved sample, reference (d).

3. Results of compatibility tests are tabulated in Plate 2, which data indicate the subject sample to have the required compatibility qualities.

4. It is concluded that the subject sample, with the possible exception of pour point, complied with specification requirements. However, it is considered satisfactory for Naval use.

5. It is recommended that the production of the Tidewater Associated Oil Company, as represented by the subject sample, be considered Acceptable for Naval use.

By direction of the Comdr:

cc: BuShips (3)
Mfrs. (2)
Insp. (2)


E. KRANZFELDER
Director, Naval Boiler
and Turbine Laboratory

DTIC QUALITY INSPECTED 8

ROUTINE AND GENERAL
CLASSIFICATION TEST RESULTS

Quarter NBTL Designation	Second S-4312	First S-4251
Specific gravity	.9646	.9593
Weight per gallon - lbs.	8.033	7.989
API gravity	15.2 (15.5)	16.0
Flash point - FMCC - °F.	196 (186)	190
Fire point - CCC - °F.	246	245
Water by distillation - %	Trace (Nil)	Trace
Conradson carbon - %	8.98 (8.67)	9.55
Ash - %	.04 (.09)	.04
Pour point - Upper - °F.	-25 (10)	+20
Aniline point - °F.	126	122
Sediment by centrifuge - %	0.1 (0.1)	0.1
Sediment by extraction - %	.03 (.06)	.05
Sediment by hot filtration - %	0.0	.033
Microscope - Sediment	Low	Low
Water	Low	Low
Wax	High	High
Viscosity at 122°F - SSF	21 (23)	25
Viscosity at 122°F - SSU	178.3 (199)	222.5
Sulphur - %	1.15	---
Explosiveness - % of lower limit	35 (40)	30

HEATER TESTS

NBTL Heater test	1 (1)	1
NBTL Heater test after the addition of 1-1/2% sea water	2	2

SPECIAL TESTS

NBTL Stability test - %	0.2	0.1
Cyclohexane insoluble - %	2.07	1.85
Benzol insoluble - %	0.12	0.08
Difference - %	1.95	1.77
Isopentane insoluble - %	9.87	8.98

Bracketed figures represent Resident Inspector's Data.

FLATT 1.

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COMPATIBILITY TESTS AT 1:1 MIXING RATIO

NBTI

Designation S-4312

S-3698	4.4	Compatibility Reference Fuel Type Dw 3
S-3760	0.2	Compatibility Reference Fuel Type E
S-3764	0.7	Compatibility Reference Fuel Type B 2
S-3778	1.3 (1)	Compatibility Reference Fuel Type F
S-3795	0.1	Compatibility Reference Fuel Type A 2
S-4016	2.0 (1)	Compatibility Reference Fuel Type G
S-3528	2.6	Curacao
S-3545	0.4	Trinidad
S-3546	1.2	Creole
S-3555	0.1	Aruba
S-3593A	0.1	Abadan Navy Grade Special
S-3593B	3.8	Abadan 46% Residue
S-3602	3.2	Abadan Admiralty Grade II
S-3622	0.2	Bahrain Fuel Oil
S-3624	0.1	Bahrain Fuel Oil
S-3663	0.1	Bahrain Fuel Oil
S-3664	0.5	Bahrain Fuel Oil
S-4328	0.2	Union Oil Company (Second Quarter)
S-4329	0.1	Standard Oil Company (Second Quarter)
S-4275	0.1	The Texas Oil Company (First Quarter)
S-4297	0.1	General Petroleum Corp. (First Quarter)

Bracketed figures represent results of NBTI Heater test.
Unbracketed figures represent results of NBTI Oxidation test.